

## VPDES PERMIT FACT SHEET

This document gives pertinent information concerning the reissuance of the VPDES permit listed below. This permit is being processed as a minor, municipal permit. The effluent limitations contained in this permit will maintain the Water Quality Standards of 9 VAC 25-260 et seq. The discharge will result from the proposed operation of a municipal wastewater treatment plant. This permit action includes revised effluent limitations and special conditions in the permit.

1. Facility Name and Address: Middlesex Courthouse WWTP  
Saluda, VA 23149  
  
Location: Northern side of Rt.33, ¼ mile east of Courthouse Drive
2. SIC Code: 4952
3. Permit No. VA0091316 Permit Expiration Date: December 10, 2008
4. Owner Contact:  
Name: Charles Culley, Jr.  
Title: County Administrator  
Telephone No.: 804/758-4330  
Address: P.O. Box 428, Saluda, VA 23149
5. Application Complete Date: Date: June 20, 2008  
Permit Drafted By: Jeremy Kazio Date: June 24, 2008  
  
DEQ Regional Office: Piedmont Regional Office  
  
Reviewed By: Jaime Bauer Date: June 30, 2008  
Curt Linderman Date: August 7, 2008
6. Receiving Stream: Name: Unnamed Tributary to Urbanna Creek  
River Mile: 3-XCM000.85  
Basin: Rappahannock River  
Subbasin: N/A  
Section: 2  
Class: III  
Special Standards: None  
  
1-Day, 10-Year Low Flow: 0  
7-Day, 10-Year Low Flow: 0  
30-Day, 5-Year Low Flow: 0  
Harmonic Mean Flow: 0  
Tidal? No  
On 303(d) list? No
7. Operator License Requirements: Class IV  
The recommended attendance hours by a licensed operator and the minimum daily hours that the treatment works should be manned by operating staff are contained in the Sewage Collections and Treatment Regulations (SCAT) 9 VAC 25-790-300. A class IV licensed operator is required for this facility.
8. Reliability Class: Class I  
Reliability is a measurement of the ability of a component or system to perform its designated function without failure or interruption of service. The reliability classification is based on the water quality and public health consequences of a component or system failure. The permittee is required to maintain Class I Reliability for this facility.

9. Permit Characterization:
- |   |  |
|---|--|
| <input type="checkbox"/> Issuance                 | <input type="checkbox"/> Existing Discharge                              |
| <input checked="" type="checkbox"/> Reissuance    | <input checked="" type="checkbox"/> Proposed Discharge (existing permit) |
| <input type="checkbox"/> Revoke & Reissue         | <input checked="" type="checkbox"/> Effluent Limited                     |
| <input type="checkbox"/> Owner Modification       | <input checked="" type="checkbox"/> Water Quality Limited                |
| <input type="checkbox"/> Board Modification       | <input type="checkbox"/> WET Limit                                       |
| <input type="checkbox"/> Change of Ownership/Name | <input type="checkbox"/> Interim Limits in Permit                        |
| Effective Date:                                   | <input type="checkbox"/> Interim Limits in Other Document (attached)     |
| <input checked="" type="checkbox"/> Municipal     | <input type="checkbox"/> Compliance Schedule Required                    |
| SIC Code(s): 4952                                 | <input type="checkbox"/> Site Specific WQ Criteria                       |
| <input type="checkbox"/> Industrial               | <input type="checkbox"/> Variance to WQ Standards                        |
| SIC Code(s):                                      | <input type="checkbox"/> Water Effects Ratio                             |
| <input checked="" type="checkbox"/> POTW          | <input checked="" type="checkbox"/> Discharge to 303(d) Listed Segment   |
| <input type="checkbox"/> PVOTW                    | <input type="checkbox"/> Toxics Management Program Required              |
| <input type="checkbox"/> Private                  | <input type="checkbox"/> Toxics Reduction Evaluation                     |
| <input type="checkbox"/> Federal                  | <input type="checkbox"/> Possible Interstate Effect                      |
| <input type="checkbox"/> State                    | <input type="checkbox"/> Storm Water Management Plan                     |

10. Wastewater Flow and Treatment:

Table 1

Outfall Number	Wastewater Source	Treatment	Flow
001	Commercial and residential	flow equalization, sequencing batch reactor, clarification, sludge wasting and holding, post-equalization, UV disinfection, post-aeration	39,900 gpd (0.0399 MGD) design capacity

Please note that the wastewater treatment plant has not been built or operated as of the 2008 permit reissuance application.

See **Attachment A** for facility diagrams.

11. Sludge Disposal: Waste sludge will be held in a holding tank and disposed of by a licensed contract hauler as needed.
12. Discharge Location Description: This facility discharges to an unnamed tributary to Urbanna Creek. Name of USGS topo map: Saluda topo – 123D (See **Attachment B**)
13. Material Storage: Chemicals to be used for the wastewater plant will be stored in proper containers and under roof cover.
14. Ambient Water Quality Information:  
Ambient water quality data is not needed because the receiving stream is dry at the theoretical low flows used in developing permit limitations. The receiving stream was not assessed in the 2006 or draft 2008 305(b)/303(d) Water Quality Assessment Integrated Report.
15. Antidegradation Review and Comments:  
The State Water Control Board's Water Quality Standards includes an antidegradation policy (9 VAC 25-260-30). All state surface waters are provided one of three levels of antidegradation protection. For Tier 1 or existing use protection, existing uses of the water body and the water quality to protect those uses must be maintained. Tier 2 water bodies have water quality that is better than the water quality standards. Significant lowering of the water quality of Tier 2 waters is not allowed without an evaluation of the economic and social impacts. Tier 3 water bodies are exceptional waters and are so designated by regulatory amendment. The antidegradation policy prohibits new or expanded discharges into exceptional waters.

The antidegradation review begins with a Tier determination. The receiving stream flowing to Urbanna Creek is determined to be a Tier 1 waterbody. This determination is based on the intermittent nature of the stream where beneficial uses cannot be fully attained. (See **Attachment C** for Flow Frequency Memorandum by Jennifer V. Palmore, P.G. dated June 20, 2008)

16. Site Inspection: None conducted, facility not constructed. (See **Attachment D**)
17. Effluent Limitation Development: See **Attachment E** which presents the evaluations for several pollutants of concern. Included in Attachment E are the MSTRANTI printout with WLAs and the STATS v2.0.4 analysis for ammonia.

Table 2 – Limitations Basis

PARAMETER	BASIS FOR LIMITS	DISCHARGE LIMITS				MONITORING REQUIREMENTS	
		MO AVG	WE AVG	MIN	MAX	FREQ	SAMP TYPE
Flow (MGD)	NA	NL – monitoring only	NA	NA	NL	1/Day	Estimate
pH (standard units)	1, 4	NA	NA	6.0 su	9.0 su	1/Day	Grab
cBOD <sub>5</sub>	2	10 mg/L (1500 g/d)	15 mg/L (2300 g/d)	NA	NA	1/Month	Grab
Total Suspended Solids (TSS)	2	10 mg/L (1500 g/d)	15 mg/L (2300 g/d)	NA	NA	1/Month	Grab
Dissolved Oxygen (DO)	2	NA	NA	5.0 mg/L	NA	1/Day	Grab
Total Kjeldahl Nitrogen (TKN)	2	3.0 mg/L (450 g/d)	4.5 mg/L (680 g/d)	NA	NA	1/Month	Grab
Fecal Coliform	2, 3	200 N/100 ml	NA	NA	NL	2/Month (10am-4pm)	Grab
E.Coli	3	126 N/100 ml Geo. Mean	NA	NA	NL	1/Week (10am-4pm)	Grab

1. Water Quality Standards	2. Best Professional Judgment (BPJ)
3. Water Quality Based Effluent Limitations	4. Federal Effluent Guidelines

- **Ammonia (Additional Information):**

A limitation evaluation begins by determining chronic and acute wasteload allocations (WLA's) using the MSTRANTI Excel Spreadsheet. MSTRANTI produces WLA's with calculations based on the Virginia Water Quality Standards (9 VAC 25-260 et. seq.) using data inputs for both effluent and receiving stream qualities and flows. Once determined, the chronic and acute WLA's are entered into the STATS 2.0.4 computer application along with the appropriate quantification level (QL) and at least one data point for each parameter. The output from the STATS 2.0.4 application will indicate the need for a permit limitation and calculate that limitation if needed.

Since this facility is not yet built or operating, the data required for effluent quality in the MSTRANTI spreadsheet were taken from another existing facility of similar design flow and location (Middle Peninsula Regional Security Center) (see **Attachment E**). The receiving stream for the Middlesex Courthouse WWTP's discharge is considered intermittent, and therefore is assigned a zero low flow designation. In these cases, the receiving stream may be most conservatively characterized by the facility's effluent, and therefore, data used in MSTRANTI for this facility's effluent were also applied as the stream's ambient data.

For Ammonia, GM 00-2011 requires that a concentration of 9 mg/L be entered into STATS 2.0.4 as a data point in order to force the program to produce a limit for Ammonia, if the WLA's are low enough that one is needed. An Ammonia limitation of 1.67 mg/L was calculated using the process explained above. Ammonia nitrogen, as a general rule, comprises approximately 40%-60% of a measured

TKN concentration. Due in part to there being such a marginal difference between the existing TKN limit (3.0 mg/L) and the speculative maximum TKN concentration needed to protect the calculated Ammonia limit, it is staff's opinion that a limitation for Ammonia should not be applied at this time and that the current TKN limitation will effectively control Ammonia toxicity. This decision is supported by the fact that Ammonia WLA's are generally calculated based on receiving stream pH and temperature, which in this case have been "borrowed" from the effluent characterization of another facility, as explained in the preceding paragraph. In order to prevent future antibacksliding issues by incorporating a limitation based on circuitous data into the 2008 permit, it is recommended that the Ammonia limitation analysis be reexamined upon permit development in 2013 using the Middlesex Courthouse WWTP's actual effluent characterization.

- **Limitation Rationale for cBOD<sub>5</sub>, TSS, DO, and Bacteria (Additional Information)**

cBOD<sub>5</sub>, TKN, TSS, and DO: Best professional judgment was used as the basis for these limitations at the recommendation of the Stream Sanitation Analysis dated May 5, 2003 by Jennifer Palmore. This analysis documents the observed characteristics of the receiving stream, which include heavy algae content and infiltration of the stream into the groundwater by way of a swallow hole. Due to these observations, the receiving stream is considered to be un-modelable by current desktop analytical methods employed by the agency. Therefore, limitations for these parameters that are considered protective of un-modelable streams were recommended for, and are incorporated into, the 2008 permit reissuance.

Fecal Coliform: Due to the proximity of this discharge to Urbanna Creek, which is considered a supportive shellfish growing habitat (or shellfish waters), this bacterial limit has been included in the 2008 permit reissuance. For sewage discharges that may reach shellfish waters, permits limit fecal coliform with an effluent limit of 200 per 100 milliliters, applied as a monthly average. Although the Water Quality Standards have been amended to remove the reference to this effluent limit in shellfish waters, the Virginia Department of Health, Bureau of Shellfish Sanitation still uses fecal coliform as an indicator for determining the quality of shellfish waters, and it is necessary to ensure discharges meet this level. Since it has historically maintained the in-stream water quality criteria for fecal coliform of 14/43 per 100 milliliters, the 200 per 100 milliliters effluent limit will be used in shellfish waters in order to continue meeting the in-stream criteria and for protection of shellfish under the general standard

E.coli: An e.coli limitation of 126N/100mL is prescribed for discharges into freshwater receiving streams (9 VAC 25-260-170.A.2). The disinfection policy of 9 VAC 25-260-170.B (Water Quality Standards) requires that all effluents attain the applicable bacteria concentrations prior to discharge. Since the method of disinfection for this facility is an approved method other than chlorination, monitoring for this parameter is once per week.

18. Basis for Sludge Use & Disposal Requirements: Not applicable, as this facility does not land apply sludge.
19. Antibacksliding: All limitations in the proposed 2008 permit reissuance are the same or more stringent than the limitations in the 2003 permit issuance with one exception: Total Residual Chlorine. This parameter has been removed from the 2008 permit reissuance because the applicant has indicated on the application that the facility will incorporate UV disinfection instead of chlorine. Because new information is available for the 2008 permit reissuance that was not available during the 2003 issuance, antibacksliding rules have not been violated.
20. Compliance Schedules  
The VPDES Permit Regulation at 9 VAC 25-31-250 allows for schedules that will lead to compliance with the Clean Water Act, the State Water Control Law, and regulations promulgated under them. However, this facility has not yet been constructed and therefore compliance schedules are not applicable for the 2008 permit reissuance.

21. Special Conditions – Part I.B:

- a. Special Condition B.1 – 95% Capacity Reopener  
Rationale: Required by VPDES Permit Regulation, 9 VAC 25-31-200 B 2 for all POTW and PVOTW permits.
- b. Special Condition B.2 – O&M Manual Requirement  
Rationale: Required by Code of Virginia §62.1-44.19; Sewage Collection and Treatment Regulations, 9 VAC 25-790; VPDES Permit Regulation, 9 VAC 25-31-190 E.
- c. Special Condition B.3 – Licensed Operator Requirement  
Rationale: The VPDES Permit Regulation, 9 VAC 25-31-200 C and the Code of Virginia § 54.1-2300 et seq., Rules and Regulations for Waterworks and Wastewater Works Operators (18 VAC 160-20-10 et seq.), require licensure of operators.
- d. Special Condition B.4. – Reliability Class  
Rationale: Required by Sewage Collection and Treatment Regulations, 9 VAC 25-790 for all municipal facilities.
- e. Special Condition B.5 – Sludge Use and Disposal  
Rationale: VPDES Permit Regulation, 9 VAC 25-31-100 P; 220 B 2; and 420 through 720, and 40 CFR Part 503 require all treatment works treating domestic sewage to submit information on sludge use and disposal practices and to meet specified standards for sludge use and disposal.
- f. Special Condition B.6. – Sludge Reopener  
Rationale: Required by VPDES Permit Regulation, 9 VAC 25-31-220 C 4 for all permits issued to treatment works treating domestic sewage.
- g. Special Condition B.7 – Compliance Reporting  
Rationale: Authorized by VPDES Permit Regulation, 9 VAC 25-31-190 J 4 and 220 I. This condition is necessary when pollutants are monitored by the permittee and a maximum level of quantification and/or a specific analytical method is required in order to assess compliance with a permit limitation or to compare effluent quality with a numeric criterion. The condition also establishes protocols for calculation of reported values.
- h. Special Condition B.8 – Materials Handling/Storage  
Rationale: 9 VAC 25-31-50 A prohibits the discharge of any wastes into State waters unless authorized by permit. Code of Virginia §62.1-44.16 and 62.1-44.17 authorizes the Board to regulate the discharge of industrial waste or other waste.
- i. Special Condition B.9 – TMDL Reopener  
Rationale: Section 303(d) of the Clean Water Act requires that total maximum daily loads (TMDLs) be developed for streams listed as impaired. This special condition is to allow the permit to be reopened if necessary to bring it into compliance with any applicable TMDL approved for the receiving stream. The re-opener recognizes that, according to section 402(o)(1) of the Clean Water Act, limits and/or conditions may be either more or less stringent than those contained in this permit. Specifically, they can be relaxed if they are the result of a TMDL, basin plan, or other wasteload allocation prepared under section 303 of the Act. The TMDL reopener special condition is being included in all VPDES permits.
- j. Special Condition B.10—Indirect Dischargers  
Rationale: Required by VPDES Permit Regulation, 9 VAC 25-31-200 B.1 & B.2 for POTWs and PVOTWs that receive waste from someone other than the owner of the treatment works.

- k. Special Condition B.11 – CTO, CTC Requirement  
Rationale: Required by Code of Virginia § 62.1-44.19; Sewage Collection and Treatment Regulations, 9 VAC 25-790. Additional language included as a result of staff recommendation to the State Water Control Board. See Item 27.c. of this fact sheet for further information.
  - l. Special Condition B.12 – Nutrient Reopener  
Rationale: 9 VAC 25-31-390 A authorizes DEQ to modify VPDES permits to promulgate amended water quality standards.
  - m. Special Condition B.13 – Notice of Commencement of Discharge  
Rationale: This language is designed to clarify monitoring and reporting requirements before the commencement of discharge. Inclusion is pursuant to state-wide water permit manager consensus.
22. Part II, Conditions Applicable to All VPDES Permits  
The VPDES Permit Regulation at 9 VAC 25-31-190 requires all VPDES permits to contain or specifically cite the conditions listed.
23. Changes to Current Permit

Table 3: Permit Processing Change Sheet

Parameter Changed		Effluent Limits Changed		Monitoring Requirement Changed		Reason for Change	Date
		From	To	From	To		
TRC	Monthly Average	0.008 mg/L	REMOVED	1/Day	REMOVED	This limitation was removed because the application for the 2008 permit reissuance indicated that the permittee plans to use alternate disinfection methods (Ultraviolet).	6/08
	Weekly Average	0.009 mg/L					
TSS	Monthly Average	10 mg/L	No Change	1/Month	No Change	Due to typographical and mathematical error during the development of 2003 permit, the weekly average concentration and loading limitations have been revised in the 2008 reissuance to reflect the correct limits for these parameters.  All loading limitations have also been revised in accordance with GM06-2016.	
		1.5 kg/d	1500 g/d				
	Weekly Average	16.5 mg/L	15 mg/L				
		2.5 kg/d	2300 g/d				
cBOD <sub>5</sub>	Monthly Average	10 mg/L	No Change				
		1.5 kg/d	1500 g/d				
	Weekly Average	16.5 mg/L	15 mg/L				
		2.5 kg/d	2300 g/d				
TKN	Monthly Average	3.0 mg/L	No Change	1/Month	No Change	Loading limitations have been revised in accordance with GM06-2016.	
		0.5 kg/d	450 g/d				
	Weekly Average	4.5 mg/L	No Change				
		0.7 kg/d	680 g/d				
Fecal Coliform		200 N/100 mL (Geometric Mean)	200 N/100 mL	1/Month (between 10 am and 4 pm)	2/Month (between 10 am and 4 pm)	In accordance with current agency guidance (Permit Manual), permits discharging to shellfish waters are to continue to limit fecal coliform with an effluent limit of 200 per 100 milliliters, applied as a <b>monthly average</b> . The fecal coliform monitoring frequency has also been changed in accordance with current agency guidance. Sample type revised to exclude superfluous specification.	

<u>Parameter Changed</u>	<u>Effluent Limits Changed</u>		<u>Monitoring Requirement Changed</u>		<u>Reason for Change</u>	<u>Date</u>
	<u>From</u>	<u>To</u>	<u>From</u>	<u>To</u>		
E.Coli	--	126 N/100 mL (Geometric Mean)	--	1/Week (between 10 am and 4 pm)	Guidance memo #03-2007 augmented the fecal coliform criteria with the addition of E.Coli criteria as the standard for proof of disinfection when the discharge is to freshwater. Please see Item 17. of this fact sheet for more information concerning this limitation.	6/08

Table 3: Permit Processing Change Sheet (continued)

<u>From</u>	<u>To</u>	<u>Special Condition Changed</u>	<u>Reason for Change</u>	<u>Date</u>
Part I.A.1.a	Part I.A.1(a)	Design Flow	No changes	6/08
--	Part I.A.1(b)	Significant digits	New, reflects current agency guidance	
Part I.A.2	Part I.A.2	Discharge of floating solids/foam	No changes	
--	Part I.A.3	Sample location	New, reflects current agency policy	
Part I.A.1.c	Part I.A.4	85% Removal for cBOD <sub>5</sub> & TSS	No changes	
--	Part I.A.5	Notification of Discharge	New, reflects state-wide water permit manager consensus.	
Part I.C.1	Part I.B.1	95% Capacity Notification	No changes	
Part I.C.2	Part I.B.2	O & M Manual	Revised to reflect current agency guidance	
Part I.C.3	Part I.B.3	Licensed Operator	No changes	
Part I.C.6	Part I.B.4	Reliability Class	No changes	
Part I.C.8	Part I.B.5	Sludge Use and Disposal	Revised wording to reflect current agency guidance	
Part I.C.9	Part I.B.6	Sludge Reopener	No changes	
Part I.C.10	Part I.B.7	Compliance Reporting	Revised to reflect current agency guidance and revised effluent limitations. Language also revised for clarity purposes.	
Part I.C.7	Part I.B.8	Materials Handling/Storage	No changes	
--	Part I.B.9	TMDL Reopener	New, reflects current agency guidance	
Part I.C.7	Part I.B.10	Indirect Dischargers	No changes	
--	Part I.B.11	CTC, CTO Requirement	Revised to reflect current agency guidance. Amended in accordance with staff recommendation to the SWCB. See Item 27.c of this fact sheet for further information.	
Part I.C.4	Part I.B.12	Nutrient Reopener	Revised to reflect current agency guidance	
Part I.A.1.b	(deleted)	Compliance Reporting Reference	No longer required per current agency guidance (Permit Manual)	
Part I.B.	(deleted)	Total Residual Chlorine Limitations and Monitoring Requirements	No longer required. The permittee indicated on the application for the 2008 permit reissuance that alternate disinfection (UV) will be used in place of chlorination.	
Part I.C.5	(deleted)	Water Quality Criteria Reopener	No longer required per current agency guidance (Permit Manual)	
Part I.C.11	(deleted)	Closure Plan	Closure of treatment works is covered by the SCAT regulations, therefore the Closure Plan requirement has been removed.	
Part I.D	(deleted)	Bacterial Effluent Limitations and Monitoring Requirements – Additional Instructions	No longer required. The permittee indicated on the application for the 2008 permit reissuance that alternate disinfection (UV) will be used in place of chlorination. In accordance with current agency guidance, compliance with the bacterial limitation for E.Coli in Part I.A. shall serve as proof of adequate disinfection.	

<u>From</u>	<u>To</u>	<u>Special Condition Changed</u>	<u>Reason for Change</u>	<u>Date</u>
On the cover page, the "NEW-16" and the "a" Special Standards were deleted to reflect the most current version of the Water Quality Standards. During the 2003 issuance of this permit, staff decided to incorporate Special Standards "a" as part of the permit, even though the receiving water body (intermittent tributary to Urbanna Creek) did not, and still does not, include this special standard. However, the permit conditions for the 2008 reissuance have been developed with the same special standard factors as the 2003 issuance in order to protect the downstream shellfish waters.				

24. Variances/Alternate Limits or Conditions: None.

25. Public Notice Information required by 9 VAC 25-31-280 B:

Comment period: Start Date: September 11, 2008 End Date: October 14, 2008  
Published Dates: September 11 and September 18, 2008 in the *Southside Sentinel*

All pertinent information is on file and may be inspected or copied by contacting Jeremy Kazio at:

Virginia Department of Environmental Quality (DEQ)  
Piedmont Regional Office  
4949-A Cox Road  
Glen Allen, Virginia 23060-6296

Telephone Number 804/527-5044  
Facsimile Number 804/527-5106  
Email jskazio@deq.virginia.gov

Persons may comment in writing or by email to the DEQ on the proposed permit action, and may request a public hearing, during the comment period. Comments shall include the name, address, and telephone number of the writer and of all persons represented by the commenter/requester, and shall contain a complete, concise statement of the factual basis for comments. Only those comments received within this period will be considered. The DEQ may decide to hold a public hearing, including another comment period, if public response is significant and there are substantial, disputed issues relevant to the permit. Requests for public hearings shall state 1) the reason why a hearing is requested; 2) a brief, informal statement regarding the nature and extent of the interest of the requester or of those represented by the requester, including how and to what extent such interest would be directly and adversely affected by the permit; and 3) specific references, where possible, to terms and conditions of the permit with suggested revisions.

Following the comment period, the Board will make a determination regarding the proposed permit action.

The public may review the draft permit and application at the DEQ Piedmont Regional Office by appointment

26. Total Maximum Daily Load (TMDL): This discharge was not addressed in any TMDL document because the facility does not discharge to a stream segment on the 303(d) list

27. Additional Comments:

a. Previous Board Action: None.

b. Staff Comments:

- This facility has not yet been constructed; therefore, the facility is not eligible for reduced monitoring at this time.
- Financial assurance does not apply to this facility because it is a POTW.



- During the 2003 issuance, staff changed the Special Standards designation to “a”. For the 2008 reissuance of this permit, staff believes that Special Standards assigned to certain water bodies may only be designated by the State Water Control Board. Therefore, the special standards applied during the 2003 issuance have been removed from the permit for the 2008 reissuance. However, the criteria set by those Special Standards for limitations and monitoring development have been applied to the 2008 permit reissuance as a Best Engineering Judgment to protect downstream shellfish waters.
  - The Middlesex Courthouse treatment facility is a new discharger with a design capacity of 39,900 gallons per day, and was issued a CTC prior to July 1, 2005. Because the design flow is under 40,000 GPD, this facility is not considered a significant discharger under the Code of Virginia § 62.1-44.19:14.C.5 for new dischargers, and consequently is not subject to coverage under the *General VPDES Watershed Permit Regulation for Total Nitrogen and Total Phosphorus Discharges and Nutrient Trading in the Chesapeake Bay Watershed in Virginia* (9 VAC 25-820). If the facility expands above to or above 40,000 GPD, the permittee will be required to apply for coverage under the above nutrient general permit.
  - The Water Quality Criteria Monitoring special condition is not being included in the 2008 permit reissuance due to a decision made during a Water Permit Manager meeting (see 6/10/03 meeting minutes) to request the submittal of this monitoring (Attachment A) in the application reminder letter. Although the aforementioned decision also includes not requiring facilities under 40,000 GPD to test for the parameters in Attachment A, this facility’s design flow (39,900 GPD) is very close, and it may be prudent to require a one-time monitoring for these parameters after the facility has begun discharging and is operating in accordance with planned specifications.
- c. Public Comment:
- A total of 179 comments were received by email, fax, written letter, or form letter during the 30-day public comment period. Of these comments, 147 requested a public hearing, and were submitted in full compliance with the information requirements outlined in 9VAC 25-230-40 of Procedural Rule No. 1. Based on the comments received, DEQ concluded there was significant public interest, and substantial, disputed issues relevant to the re-issuance of VPDES permit VA0091316. The DEQ Chief Deputy Director concurred, and approved the holding of a public hearing on November 3, 2008.
  - Members of the State Water Control Board were notified, and no comments were received requesting a meeting of the Board to review the Director’s decision to grant a hearing or to delegate the permit to the Director for his decision. Consequently, the Department proceeded with scheduling this hearing and notifying interested parties. Public notice of this hearing was published in the December 18 and December 25, 2008 editions of the *Southside Sentinel* newspaper. The comment period closed at 4:00 p.m. on February 6, 2009.
  - A Public Hearing was held at the Saint Clare Walker Middle School in Locust Hill, VA in Middlesex County on January 21, 2009 at 7:00 pm. Public attendance included 105 citizens, of whom 17 presented oral comments opposing the proposed permit re-issuance. Approximately 33 letters and emails were received during the comment period between December 18, 2008 and February 6, 2009.
  - Due to two deferrals requested by the permittee, the SWCB did not consider the decision to re-issue, modify, or deny the permit until the October 26, 2009 quarterly meeting. After hearing DEQ staff’s presentation and citizen speakers, the Board questioned the need for further assurance that the permittee discharge treated effluent at a rate that would not exceed the design capacity contained in the permit. In response, staff recommended that the permit be re-issued with the following language added to Part I.B.11: “An application for a CTC shall be accompanied by notification that the County will issue necessary approvals and design data verifying that downstream capacity is available to adequately convey and treat the design

flows in accordance with the Sewage Collection and Treatment Works, 9VAC 25-790-10 *et seq.*” In response, the SWCB unanimously adopted the DEQ staff recommendation to re-issue the amended permit.

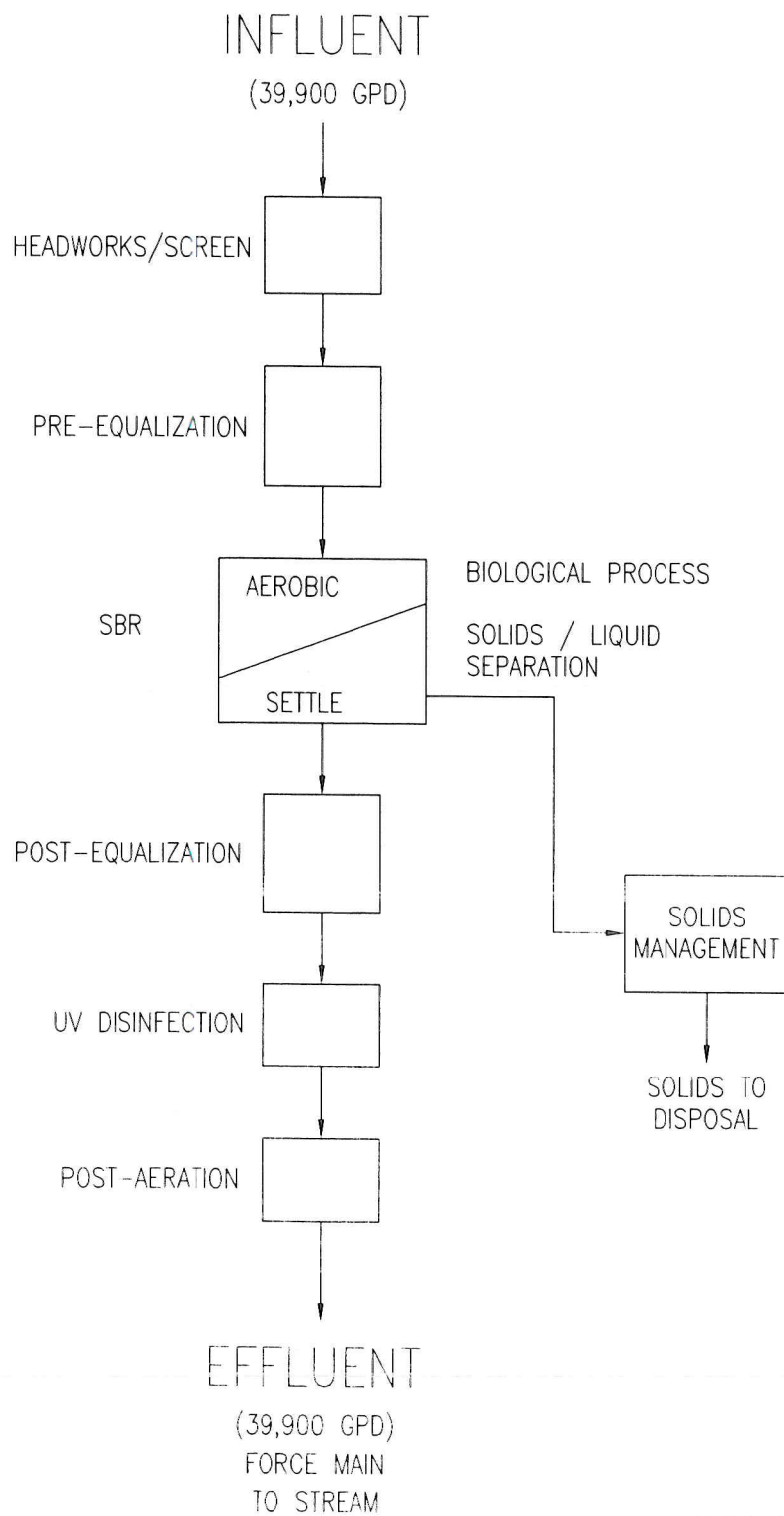
28. Summary of attachments to this Fact Sheet:

Attachment A	Facility Diagram
Attachment B	Location Map
Attachment C	Flow Frequency Analysis & Stream Sanitation Memo
Attachment D	Site Inspection Report
Attachment E	Effluent Limitation Evaluations

Fact Sheet  
Middlesex Courthouse WWTP

**Attachment A**

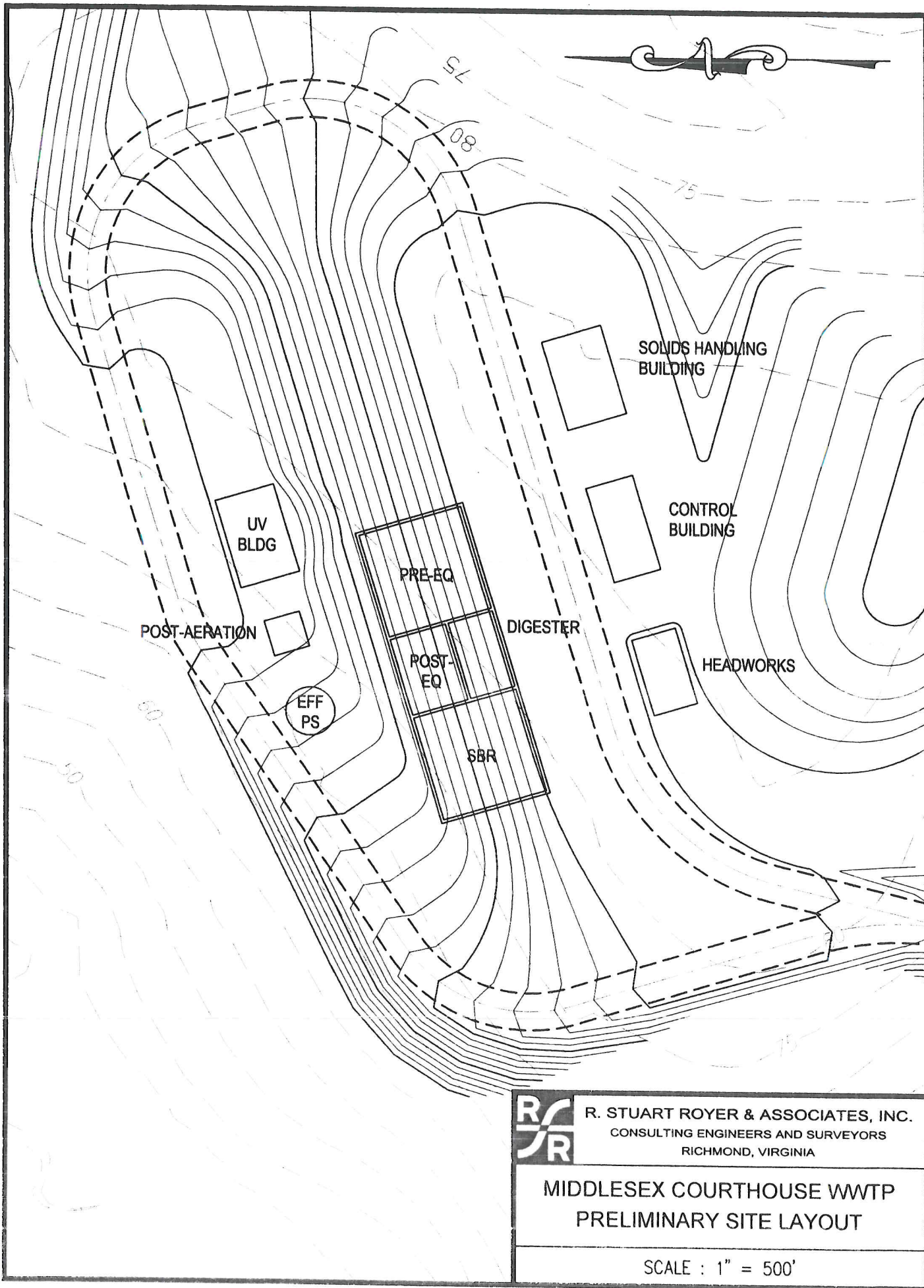
Facility Diagram



R. STUART ROYER & ASSOCIATES, INC.  
CONSULTING ENGINEERS AND SURVEYORS  
RICHMOND, VIRGINIA

MIDDLESEX COURTHOUSE  
WWTP - PROCESS SCHEMATIC

SCALE : NOT TO SCALE



R. STUART ROYER & ASSOCIATES, INC.  
CONSULTING ENGINEERS AND SURVEYORS  
RICHMOND, VIRGINIA

MIDDLESEX COURTHOUSE WWTP  
PRELIMINARY SITE LAYOUT

SCALE : 1" = 500'

Fact Sheet  
Middlesex Courthouse WWTP

**Attachment B**

Location Map







Fact Sheet  
Middlesex Courthouse WWTP

### **Attachment C**

Flow Frequency Analysis & Stream Sanitation Memo




# MEMORANDUM

DEPARTMENT OF ENVIRONMENTAL QUALITY  
Piedmont Regional Office  
4949-A Cox Road Glen Allen, Virginia 23060

**SUBJECT:** Flow Frequency Determination / 303(d) Status  
Middlesex Courthouse WWTP – VA0091316

**TO:** Jeremy Kazio

**FROM:** Jennifer V. Palmore 

**DATE:** June 20, 2008

**COPIES:** File

The Middlesex Courthouse Wastewater Treatment Plant discharges to an unnamed tributary of Urbanna Creek near Middlesex, VA. Stream flow frequencies are required at this site for use by the permit writer in developing effluent limitations for the VPDES permit.

At the discharge point, the receiving stream is shown to be an intermittent stream on the USGS Saluda Quadrangle topographic map. The flow frequencies for intermittent streams are shown below.

**Unnamed tributary at discharge point:**

1Q30 = 0.0 cfs	High Flow 1Q10 = 0.0 cfs
1Q10 = 0.0 cfs	High Flow 7Q10 = 0.0 cfs
7Q10 = 0.0 cfs	High Flow 30Q10 = 0.0 cfs
30Q10 = 0.0 cfs	HM = 0.0 cfs
30Q5 = 0.0 cfs	

The receiving stream was not assessed in the 2006 or draft 2008 305(b)/303(d) Water Quality Assessment Integrated Report. The discharge was not addressed in any TMDL document.

If you have any questions concerning this analysis, please let me know.

Att. 3

# MEMORANDUM

## DEPARTMENT OF ENVIRONMENTAL QUALITY *Piedmont Regional Office*

4949-A Cox Road, Glen Allen, VA 23060-6296

804/527-5020

**SUBJECT:** Stream Sanitation Analysis – Urbanna Creek, UT  
Middlesex Courthouse STP discharge (VA0091316)  
Proposed discharge

**TO:** Debra Barnes

**FROM:** Jennifer Palmore *JLP*

**DATE:** May 5, 2003

**COPIES:** Curt Linderman, Model file



A request for a stream sanitation analysis for an unnamed tributary to Urbanna Creek was received February 26, 2003. The stream sanitation request was submitted because the permittee proposes to construct a sewage treatment plant to serve the new Middlesex Courthouse and existing county office buildings and businesses in Saluda. The proposed discharge will be 0.0399 MGD.

A site visit was performed on May 5, 2003. The creek is shown as an intermittent stream on the USGS Saluda topographic quadrangle; it is therefore considered a Tier 1 water. At the approximate point of discharge, the creek is an incised channel approximately 3 feet in width with a sandy bottom. The creek had flowing water about 1.5' in width by 0.1' deep that meandered through the channel bottom. A substantial amount of brown algae was seen along the channel. The streamflow extended approximately 0.1 mile downstream and disappeared into a swallow hole on the west side of the channel bank. A high-flow channel extends north towards Urbanna Creek, but was dry during the site visit.

Due to the heavy algae and the infiltration of the creek into groundwater, the Regional Model 4.1 is not applicable. Best professional judgement should be used to determine the appropriate permit limits. PRO Planning recommends effluent limits at least as stringent as DEQ adopted swamp limits to maintain dissolved oxygen concentrations above the water quality standard in the receiving stream and to protect groundwater resources. As such, the following limits are recommended:

Q: 0.0399 MGD  
cBOD<sub>5</sub>: 10 mg/L  
TKN: 3.0 mg/L  
DO: 5.0 mg/L

If you have any questions or need any additional information, please do not hesitate to contact me.

**Attachment D**

Site Inspection Report

**MEMORANDUM**

**DEPARTMENT OF ENVIRONMENTAL QUALITY**  
*Piedmont Regional Office*

4949-A Cox Rd Glen Allen, VA 23060

(804) 527-5044

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SUBJECT: Site Visit

TO: File

FROM: Jeremy Kazio, PRO

DATE: March 25, 2009

COPIES: File

Facility Name: Middlesex Courthouse WWTP Permit Number: VA0091316

A site visit has not been conducted for this facility by DEQ-PRO Water Permitting Staff or Water Enforcement Staff because the facility has not yet been constructed. The only construction work that has been completed on the proposed wastewater treatment plant site is tree and vegetation removal in anticipation of breaking ground in September 2009.

**Attachment E**

**Effluent Limitation Evaluations**

## MSTRANTI DATA SOURCE REPORT

Stream Information	
Mean Hardness	All Stream Information is considered the same as the Effluent Information due to the zero low flow / intermittent nature of the receiving stream.
90% Temperature (annual)	
90% Temperature (wet season)	
90% Maximum pH	
10% Maximum pH	
Tier Designation	Flow Frequency Analysis
Stream Flows	
All Data	Flow Frequency Analysis
Mixing Information	
All Data	Dry ditch discharge, a 100% mix is assumed.
Effluent Information	
Mean Hardness	Since this facility is not yet constructed or operating, no effluent data is available. The hardness concentration is, in this instance, a conservative assumption.
90% Temperature (annual)	Since this facility is not yet constructed or operating, no effluent data is available. The data used in MSTRANTI for this facility are taken from a facility located in a similar location and with a similar design flow (Middle Peninsula Regional Security Center)
90% Maximum pH	
10% Maximum pH	
Discharge Flow	WWTP Design Flow provided in the application.



# FRESHWATER WATER QUALITY CRITERIA / WASTELOAD ALLOCATION ANALYSIS

Facility Name: Middlesex Courthouse WWTP

Permit No.: VA0091316

Version: OWP Guidance Memo 00-2011 (8/24/00)

Receiving Stream: UT Urbanna Creek

Stream Information			Stream Flows			Mixing Information			Effluent Information		
Mean Hardness (as CaCO <sub>3</sub> ) =	25 mg/L		1Q10 (Annual) =	0 MGD		Annual - 1Q10 Mix =	100 %		Mean Hardness (as CaCO <sub>3</sub> ) =	25 mg/L	
90% Temperature (Annual) =	18.8 deg C		7Q10 (Annual) =	0 MGD		- 7Q10 Mix =	100 %		90% Temp (Annual) =	18.8 deg C	
90% Temperature (Wet season) =	9.5 deg C		30Q10 (Annual) =	0 MGD		- 30Q10 Mix =	100 %		90% Temp (Wet season) =	9.5 deg C	
90% Maximum pH =	8.5 SU		1Q10 (Wet season) =	0 MGD		Wet Season - 1Q10 Mix =	100 %		90% Maximum pH =	8.5 SU	
10% Maximum pH =	7.5 SU		30Q10 (Wet season) =	0 MGD		- 30Q10 Mix =	100 %		10% Maximum pH =	7.5 SU	
Tier Designation (1 or 2) =	1		30Q5 =	0 MGD					Discharge Flow =	0.0399 MGD	
Public Water Supply (PWS) Y/N? =	n		Harmonic Mean =	0 MGD							
Trout Present Y/N? =	n		Annual Average =	N/A MGD							
Early Life Stages Present Y/N? =	y										

Parameter (ug/l unless noted)	Background Conc.	Water Quality Criteria			Wasteload Allocations			Antidegradation Baseline			Antidegradation Allocations			Most Limiting Allocations		
		Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)
Acenaphthene	0	-	-	na	2.7E+03	-	-	na	2.7E+03	-	-	-	-	-	-	na
Acrolein	0	-	-	na	7.8E+02	-	-	na	7.8E+02	-	-	-	-	-	-	na
Acrylonitrile <sup>c</sup>	0	-	-	na	6.6E+00	-	-	na	6.6E+00	-	-	-	-	-	-	na
Aldrin <sup>c</sup>	0	3.0E+00	-	na	1.4E-03	3.0E+00	-	na	1.4E-03	-	-	-	-	3.0E+00	-	na
Ammonia-N (mg/l)	0	3.20E+00	8.27E-01	na	-	3.2E+00	8.3E-01	na	-	-	-	-	-	3.2E+00	8.3E-01	na
Ammonia-N (mg/l) (High Flow)	0	3.20E+00	1.09E+00	na	-	3.2E+00	1.1E+00	na	-	-	-	-	-	3.2E+00	1.1E+00	na
Anthracene	0	-	-	na	1.1E+05	-	-	na	1.1E+05	-	-	-	-	-	-	na
Antimony	0	-	-	na	4.3E+03	-	-	na	4.3E+03	-	-	-	-	-	-	na
Arsenic	0	3.4E+02	1.5E+02	na	-	3.4E+02	1.5E+02	na	-	-	-	-	-	3.4E+02	1.5E+02	na
Barium	0	-	-	na	-	-	-	na	-	-	-	-	-	-	-	na
Benzene <sup>c</sup>	0	-	-	na	7.1E+02	-	-	na	7.1E+02	-	-	-	-	-	-	na
Benzidine <sup>c</sup>	0	-	-	na	5.4E-03	-	-	na	5.4E-03	-	-	-	-	-	-	na
Benzo (a) anthracene <sup>c</sup>	0	-	-	na	4.9E-01	-	-	na	4.9E-01	-	-	-	-	-	-	na
Benzo (b) fluoranthene <sup>c</sup>	0	-	-	na	4.9E-01	-	-	na	4.9E-01	-	-	-	-	-	-	na
Benzo (k) fluoranthene <sup>c</sup>	0	-	-	na	4.9E-01	-	-	na	4.9E-01	-	-	-	-	-	-	na
Benzo (a) pyrene <sup>c</sup>	0	-	-	na	4.9E-01	-	-	na	4.9E-01	-	-	-	-	-	-	na
Bis(2-Chloroethyl) Ether	0	-	-	na	4.9E-01	-	-	na	4.9E-01	-	-	-	-	-	-	na
Bis(2-Chloroisopropyl) Ether	0	-	-	na	1.4E+01	-	-	na	1.4E+01	-	-	-	-	-	-	na
Bromofom <sup>c</sup>	0	-	-	na	1.7E+05	-	-	na	1.7E+05	-	-	-	-	-	-	na
Butylbenzylphthalate	0	-	-	na	3.6E+03	-	-	na	3.6E+03	-	-	-	-	-	-	na
Cadmium	0	8.2E-01	3.8E-01	na	5.2E+03	8.2E-01	3.8E-01	na	5.2E+03	-	-	-	-	8.2E-01	3.8E-01	na
Carbon Tetrachloride <sup>c</sup>	0	-	-	na	4.4E+01	-	-	na	4.4E+01	-	-	-	-	-	-	na
Chlordane <sup>c</sup>	0	2.4E+00	4.3E-03	na	2.2E-02	2.4E+00	4.3E-03	na	2.2E-02	-	-	-	-	2.4E+00	4.3E-03	na
Chloride	0	8.6E+05	2.3E+05	na	-	8.6E+05	2.3E+05	na	-	-	-	-	-	8.6E+05	2.3E+05	na
TRC	0	1.9E+01	1.1E+01	na	-	1.9E+01	1.1E+01	na	-	-	-	-	-	1.9E+01	1.1E+01	na
Chlorobenzene	0	-	-	na	2.1E+04	-	-	na	2.1E+04	-	-	-	-	-	-	na

Parameter (ug/l unless noted)	Background Conc.	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
		Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Chlorodibromomethane <sup>c</sup>	0	-	-	na	3.4E+02	-	-	na	3.4E+02	-	-	-	-	-	-	-	-	-	-	na	3.4E+02
Chloroform <sup>c</sup>	0	-	-	na	2.9E+04	-	-	na	2.9E+04	-	-	-	-	-	-	-	-	-	-	na	2.9E+04
2-Chloronaphthalene	0	-	-	na	4.3E+03	-	-	na	4.3E+03	-	-	-	-	-	-	-	-	-	-	na	4.3E+03
2-Chlorophenol	0	-	-	na	4.0E+02	-	-	na	4.0E+02	-	-	-	-	-	-	-	-	-	-	na	4.0E+02
Chlorpyrifos	0	8.3E-02	4.1E-02	na	-	8.3E-02	4.1E-02	na	-	-	-	-	-	-	-	-	-	8.3E-02	4.1E-02	na	-
Chromium III	0	1.8E+02	2.4E+01	na	-	1.8E+02	2.4E+01	na	-	-	-	-	-	-	-	-	-	1.8E+02	2.4E+01	na	-
Chromium VI	0	1.6E+01	1.1E+01	na	-	1.6E+01	1.1E+01	na	-	-	-	-	-	-	-	-	-	1.6E+01	1.1E+01	na	-
Chromium, Total	0	-	-	na	-	-	-	na	-	-	-	-	-	-	-	-	-	-	-	na	-
Chrysene <sup>c</sup>	0	-	-	na	4.9E-01	-	-	na	4.9E-01	-	-	-	-	-	-	-	-	-	-	na	4.9E-01
Copper	0	3.6E+00	2.7E+00	na	-	3.6E+00	2.7E+00	na	-	-	-	-	-	-	-	-	-	3.6E+00	2.7E+00	na	-
Cyanide	0	2.2E+01	5.2E+00	na	2.2E+05	2.2E+01	5.2E+00	na	2.2E+05	-	-	-	-	-	-	-	-	2.2E+01	5.2E+00	na	2.2E+05
DDD <sup>c</sup>	0	-	-	na	8.4E-03	-	-	na	8.4E-03	-	-	-	-	-	-	-	-	-	-	na	8.4E-03
DDE <sup>c</sup>	0	-	-	na	5.9E-03	-	-	na	5.9E-03	-	-	-	-	-	-	-	-	-	-	na	5.9E-03
DDT <sup>c</sup>	0	1.1E+00	1.0E-03	na	5.9E-03	1.1E+00	1.0E-03	na	5.9E-03	-	-	-	-	-	-	-	-	1.1E+00	1.0E-03	na	5.9E-03
Demeton	0	-	1.0E-01	na	-	-	-	na	-	-	-	-	-	-	-	-	-	-	-	na	-
Dibenz(a,h)anthracene <sup>c</sup>	0	-	-	na	4.9E-01	-	-	na	4.9E-01	-	-	-	-	-	-	-	-	-	-	na	4.9E-01
Dibutyl phthalate	0	-	-	na	1.2E+04	-	-	na	1.2E+04	-	-	-	-	-	-	-	-	-	-	na	1.2E+04
Dichloromethane	0	-	-	na	1.6E+04	-	-	na	1.6E+04	-	-	-	-	-	-	-	-	-	-	na	1.6E+04
(Methylene Chloride) <sup>c</sup>	0	-	-	na	1.7E+04	-	-	na	1.7E+04	-	-	-	-	-	-	-	-	-	-	na	1.7E+04
1,2-Dichlorobenzene	0	-	-	na	2.6E+03	-	-	na	2.6E+03	-	-	-	-	-	-	-	-	-	-	na	2.6E+03
1,3-Dichlorobenzene	0	-	-	na	2.6E+03	-	-	na	2.6E+03	-	-	-	-	-	-	-	-	-	-	na	2.6E+03
1,4-Dichlorobenzene	0	-	-	na	7.7E-01	-	-	na	7.7E-01	-	-	-	-	-	-	-	-	-	-	na	7.7E-01
3,3-Dichlorobenzidine <sup>c</sup>	0	-	-	na	4.6E+02	-	-	na	4.6E+02	-	-	-	-	-	-	-	-	-	-	na	4.6E+02
Dichlorobromomethane <sup>c</sup>	0	-	-	na	9.9E+02	-	-	na	9.9E+02	-	-	-	-	-	-	-	-	-	-	na	9.9E+02
1,2-Dichloroethane <sup>c</sup>	0	-	-	na	1.7E+04	-	-	na	1.7E+04	-	-	-	-	-	-	-	-	-	-	na	1.7E+04
1,1-Dichloroethylene	0	-	-	na	1.4E+05	-	-	na	1.4E+05	-	-	-	-	-	-	-	-	-	-	na	1.4E+05
1,2-trans-dichloroethylene	0	-	-	na	7.9E+02	-	-	na	7.9E+02	-	-	-	-	-	-	-	-	-	-	na	7.9E+02
2,4-Dichlorophenol	0	-	-	na	-	-	-	na	-	-	-	-	-	-	-	-	-	-	-	na	-
2,4-Dichlorophenoxy acetic acid (2,4-D)	0	-	-	na	3.9E+02	-	-	na	3.9E+02	-	-	-	-	-	-	-	-	-	-	na	3.9E+02
1,2-Dichloropropane <sup>c</sup>	0	-	-	na	1.7E+03	-	-	na	1.7E+03	-	-	-	-	-	-	-	-	-	-	na	1.7E+03
1,3-Dichloropropene	0	2.4E-01	5.6E-02	na	1.4E-03	2.4E-01	5.6E-02	na	1.4E-03	-	-	-	-	-	-	-	-	2.4E-01	5.6E-02	na	1.4E-03
Dieldrin <sup>c</sup>	0	-	-	na	1.2E+05	-	-	na	1.2E+05	-	-	-	-	-	-	-	-	-	-	na	1.2E+05
Diethyl Phthalate	0	-	-	na	5.9E+01	-	-	na	5.9E+01	-	-	-	-	-	-	-	-	-	-	na	5.9E+01
Di-2-Ethylhexyl Phthalate <sup>c</sup>	0	-	-	na	2.3E+03	-	-	na	2.3E+03	-	-	-	-	-	-	-	-	-	-	na	2.3E+03
2,4-Dimethylphenol	0	-	-	na	2.9E+06	-	-	na	2.9E+06	-	-	-	-	-	-	-	-	-	-	na	2.9E+06
Dimethyl Phthalate	0	-	-	na	1.2E+04	-	-	na	1.2E+04	-	-	-	-	-	-	-	-	-	-	na	1.2E+04
Di-n-Butyl Phthalate	0	-	-	na	1.4E+04	-	-	na	1.4E+04	-	-	-	-	-	-	-	-	-	-	na	1.4E+04
2,4 Dinitrophenol	0	-	-	na	7.65E+02	-	-	na	7.65E+02	-	-	-	-	-	-	-	-	-	-	na	7.65E+02
2-Methyl-4,6-Dinitrophenol	0	-	-	na	9.1E+01	-	-	na	9.1E+01	-	-	-	-	-	-	-	-	-	-	na	9.1E+01
2,4-Dinitrotoluene <sup>c</sup>	0	-	-	na	1.2E+06	-	-	na	1.2E+06	-	-	-	-	-	-	-	-	-	-	na	1.2E+06
Dioxin (2,3,7,8-tetrachlorodibenzo-p-dioxin) (ppq)	0	-	-	na	5.4E+00	-	-	na	5.4E+00	-	-	-	-	-	-	-	-	-	-	na	5.4E+00
1,2-Diphenylhydrazine <sup>c</sup>	0	-	-	na	2.4E+02	-	-	na	2.4E+02	-	-	-	-	-	-	-	-	-	-	na	2.4E+02
Alpha-Endosulfan	0	2.2E-01	5.6E-02	na	2.4E+02	2.2E-01	5.6E-02	na	2.4E+02	-	-	-	-	-	-	-	-	2.2E-01	5.6E-02	na	2.4E+02
Beta-Endosulfan	0	2.2E-01	5.6E-02	na	2.4E+02	2.2E-01	5.6E-02	na	2.4E+02	-	-	-	-	-	-	-	-	2.2E-01	5.6E-02	na	2.4E+02
Endosulfan Sulfate	0	-	-	na	2.4E+02	-	-	na	2.4E+02	-	-	-	-	-	-	-	-	-	-	na	2.4E+02
Endrin	0	8.6E-02	3.6E-02	na	8.1E-01	8.6E-02	3.6E-02	na	8.1E-01	-	-	-	-	-	-	-	-	8.6E-02	3.6E-02	na	8.1E-01
Endrin Aldehyde	0	-	-	na	8.1E-01	-	-	na	8.1E-01	-	-	-	-	-	-	-	-	-	-	na	8.1E-01



Parameter (ug/l unless noted)	Background Conc.	Water Quality Criteria			Wasteload Allocations			Antidegradation Baseline			Antidegradation Allocations			Most Limiting Allocations		
		Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)
Ethylbenzene	0	-	-	na	2.9E+04	-	-	-	-	-	-	-	-	-	-	na
Fluoranthene	0	-	-	na	3.7E+02	-	-	-	-	-	-	-	-	-	-	na
Fluorene	0	-	-	na	1.4E+04	-	-	-	-	-	-	-	-	-	-	na
Foaming Agents	0	-	-	na	-	-	-	-	-	-	-	-	-	-	-	na
Guthion	0	-	1.0E-02	na	-	-	1.0E-02	-	-	-	-	-	-	-	1.0E-02	na
Heptachlor <sup>c</sup>	0	5.2E-01	3.8E-03	na	2.1E-03	5.2E-01	3.8E-03	-	-	-	-	-	-	5.2E-01	3.8E-03	na
Heptachlor Epoxide <sup>c</sup>	0	5.2E-01	3.8E-03	na	1.1E-03	5.2E-01	3.8E-03	-	-	-	-	-	-	5.2E-01	3.8E-03	na
Hexachlorobenzene <sup>c</sup>	0	-	-	na	7.7E-03	-	-	-	-	-	-	-	-	-	-	na
Hexachlorobutadiene <sup>c</sup>	0	-	-	na	5.0E+02	-	-	-	-	-	-	-	-	-	-	na
Hexachlorocyclohexane	0	-	-	na	1.3E-01	-	-	-	-	-	-	-	-	-	-	na
Alpha-BHC <sup>c</sup>	0	-	-	na	4.6E-01	-	-	-	-	-	-	-	-	-	-	na
Beta-BHC <sup>c</sup>	0	-	-	na	6.3E-01	9.5E-01	-	-	-	-	-	-	-	9.5E-01	-	na
Hexachlorocyclohexane Gamma-BHC <sup>c</sup> (Lindane)	0	9.5E-01	na	na	1.7E+04	-	-	-	-	-	-	-	-	-	-	na
Hexachlorocyclopentadiene	0	-	-	na	8.9E+01	-	-	-	-	-	-	-	-	-	-	na
Hexachloroethane <sup>c</sup>	0	-	-	na	2.0E+00	-	2.0E+00	-	-	-	-	-	-	-	2.0E+00	na
Hydrogen Sulfide	0	-	2.0E+00	na	-	-	-	-	-	-	-	-	-	-	-	na
Indeno (1,2,3-cd) pyrene <sup>c</sup>	0	-	-	na	4.9E-01	-	-	-	-	-	-	-	-	-	-	na
Iron	0	-	-	na	2.6E+04	-	-	-	-	-	-	-	-	-	-	na
Isophorone <sup>c</sup>	0	-	-	na	0.0E+00	-	0.0E+00	-	-	-	-	-	-	-	0.0E+00	na
Kepone	0	2.0E+01	2.3E+00	na	-	2.0E+01	2.3E+00	-	-	-	-	-	-	2.0E+01	2.3E+00	na
Lead	0	-	1.0E-01	na	-	-	1.0E-01	-	-	-	-	-	-	-	1.0E-01	na
Malathion	0	-	-	na	-	-	-	-	-	-	-	-	-	-	-	na
Manganese	0	-	-	na	5.1E-02	1.4E+00	7.7E-01	-	-	-	-	-	-	1.4E+00	7.7E-01	na
Mercury	0	1.4E+00	7.7E-01	na	4.0E+03	-	-	-	-	-	-	-	-	-	-	na
Methyl Bromide	0	-	-	na	-	-	-	-	-	-	-	-	-	-	-	na
Methoxychlor	0	-	3.0E-02	na	-	-	3.0E-02	-	-	-	-	-	-	-	3.0E-02	na
Mirex	0	-	0.0E+00	na	-	-	0.0E+00	-	-	-	-	-	-	-	0.0E+00	na
Monochlorobenzene	0	-	-	na	2.1E+04	-	-	-	-	-	-	-	-	-	-	na
Nickel	0	5.6E+01	6.3E+00	na	4.6E+03	5.6E+01	6.3E+00	-	-	-	-	-	-	5.6E+01	6.3E+00	na
Nitrate (as N)	0	-	-	na	-	-	-	-	-	-	-	-	-	-	-	na
Nitrobenzene	0	-	-	na	1.9E+03	-	-	-	-	-	-	-	-	-	-	na
N-Nitrosodimethylamine <sup>c</sup>	0	-	-	na	8.1E+01	-	-	-	-	-	-	-	-	-	-	na
N-Nitrosodiphenylamine <sup>c</sup>	0	-	-	na	1.6E+02	-	-	-	-	-	-	-	-	-	-	na
N-Nitrosodi-n-propylamine <sup>c</sup>	0	-	-	na	1.4E+01	-	-	-	-	-	-	-	-	-	-	na
Parathion	0	6.5E-02	1.3E-02	na	-	6.5E-02	1.3E-02	-	-	-	-	-	-	6.5E-02	1.3E-02	na
PCB-1016	0	-	1.4E-02	na	-	-	1.4E-02	-	-	-	-	-	-	-	1.4E-02	na
PCB-1221	0	-	1.4E-02	na	-	-	1.4E-02	-	-	-	-	-	-	-	1.4E-02	na
PCB-1232	0	-	1.4E-02	na	-	-	1.4E-02	-	-	-	-	-	-	-	1.4E-02	na
PCB-1242	0	-	1.4E-02	na	-	-	1.4E-02	-	-	-	-	-	-	-	1.4E-02	na
PCB-1248	0	-	1.4E-02	na	-	-	1.4E-02	-	-	-	-	-	-	-	1.4E-02	na
PCB-1254	0	-	1.4E-02	na	-	-	1.4E-02	-	-	-	-	-	-	-	1.4E-02	na
PCB-1260	0	-	1.4E-02	na	-	-	1.4E-02	-	-	-	-	-	-	-	1.4E-02	na
PCB Total <sup>c</sup>	0	-	-	na	1.7E-03	-	-	-	-	-	-	-	-	-	-	na

Parameter (ug/l unless noted)	Background Conc.	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
		Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Pentachlorophenol <sup>c</sup>	0	1.4E+01	1.1E+01	na	8.2E+01	1.4E+01	1.1E+01	na	8.2E+01	-	-	-	-	-	-	-	-	1.4E+01	1.1E+01	na	8.2E+01
Phenol	0	-	-	na	4.6E+06	-	-	na	4.6E+06	-	-	-	-	-	-	-	-	-	-	na	4.6E+06
Pyrene	0	-	-	na	1.1E+04	-	-	na	1.1E+04	-	-	-	-	-	-	-	-	-	-	na	1.1E+04
Radionuclides (pCi/l except Beta/Photon)	0	-	-	na	-	-	-	na	-	-	-	-	-	-	-	-	-	-	-	na	-
Gross Alpha Activity Beta and Photon Activity (mrem/yr)	0	-	-	na	1.5E+01	-	-	na	1.5E+01	-	-	-	-	-	-	-	-	-	-	na	1.5E+01
Strontium-90	0	-	-	na	4.0E+00	-	-	na	4.0E+00	-	-	-	-	-	-	-	-	-	-	na	4.0E+00
Tritium	0	-	-	na	8.0E+00	-	-	na	8.0E+00	-	-	-	-	-	-	-	-	-	-	na	8.0E+00
Selenium	0	-	-	na	2.0E+04	-	-	na	2.0E+04	-	-	-	-	-	-	-	-	-	-	na	2.0E+04
Silver	0	2.0E+01	5.0E+00	na	1.1E+04	2.0E+01	5.0E+00	na	1.1E+04	-	-	-	-	-	-	-	-	2.0E+01	5.0E+00	na	1.1E+04
Sulfate	0	3.2E-01	-	na	-	3.2E-01	-	na	-	-	-	-	-	-	-	-	-	3.2E-01	-	na	-
1,1,2,2-Tetrachloroethane <sup>c</sup>	0	-	-	na	-	-	-	na	-	-	-	-	-	-	-	-	-	-	-	na	-
Tetrachloroethylene <sup>c</sup>	0	-	-	na	1.1E+02	-	-	na	1.1E+02	-	-	-	-	-	-	-	-	-	-	na	1.1E+02
Thallium	0	-	-	na	8.9E+01	-	-	na	8.9E+01	-	-	-	-	-	-	-	-	-	-	na	8.9E+01
Toluene	0	-	-	na	6.3E+00	-	-	na	6.3E+00	-	-	-	-	-	-	-	-	-	-	na	6.3E+00
Total dissolved solids	0	-	-	na	2.0E+05	-	-	na	2.0E+05	-	-	-	-	-	-	-	-	-	-	na	2.0E+05
Toxaphene <sup>c</sup>	0	7.3E-01	2.0E-04	na	7.5E-03	7.3E-01	2.0E-04	na	7.5E-03	-	-	-	-	-	-	-	-	7.3E-01	2.0E-04	na	7.5E-03
Tributyltin	0	4.6E-01	6.3E-02	na	-	4.6E-01	6.3E-02	na	-	-	-	-	-	-	-	-	-	4.6E-01	6.3E-02	na	-
1,2,4-Trichlorobenzene	0	-	-	na	9.4E+02	-	-	na	9.4E+02	-	-	-	-	-	-	-	-	-	-	na	9.4E+02
1,1,2-Trichloroethane <sup>c</sup>	0	-	-	na	4.2E+02	-	-	na	4.2E+02	-	-	-	-	-	-	-	-	-	-	na	4.2E+02
Trichloroethylene <sup>c</sup>	0	-	-	na	8.1E+02	-	-	na	8.1E+02	-	-	-	-	-	-	-	-	-	-	na	8.1E+02
2,4,6-Trichlorophenol <sup>c</sup>	0	-	-	na	6.5E+01	-	-	na	6.5E+01	-	-	-	-	-	-	-	-	-	-	na	6.5E+01
2-(2,4,5-Trichlorophenoxy) propionic acid (Silvex)	0	-	-	na	-	-	-	na	-	-	-	-	-	-	-	-	-	-	-	na	-
Vinyl Chloride <sup>c</sup>	0	-	-	na	6.1E+01	-	-	na	6.1E+01	-	-	-	-	-	-	-	-	-	-	na	6.1E+01
Zinc	0	3.6E+01	3.6E+01	na	6.9E+04	3.6E+01	3.6E+01	na	6.9E+04	-	-	-	-	-	-	-	-	3.6E+01	3.6E+01	na	6.9E+04

Notes:

- All concentrations expressed as micrograms/liter (ug/l), unless noted otherwise
- Discharge flow is highest monthly average or Form 2C maximum for Industries and design flow for Municipals
- Metals measured as Dissolved, unless specified otherwise
- "C" indicates a carcinogenic parameter
- Regular WLAs are mass balances (minus background concentration) using the % of stream flow entered above under Mixing Information. Antidegradation WLAs are based upon a complete mix.
- Antideg. Baseline = (0.25(WQC - background conc.) + background conc.) for acute and chronic  
= (0.1(WQC - background conc.) + background conc.) for human health
- WLAs established at the following stream flows: 1Q10 for Acute, 3Q10 for Chronic Ammonia, 7Q10 for Other Chronic, 30Q5 for Non-carcinogens, Harmonic Mean for Carcinogens, and Annual Average for Dioxin. Mixing ratios may be substituted for stream flows where appropriate.

Metal	Target Value (SSTV)
Antimony	4.3E+03
Arsenic	9.0E+01
Barium	na
Cadmium	2.3E-01
Chromium III	1.4E+01
Chromium VI	6.4E+00
Copper	1.5E+00
Iron	na
Lead	1.4E+00
Manganese	na
Mercury	5.1E-02
Nickel	3.8E+00
Selenium	3.0E+00
Silver	1.3E-01
Zinc	1.4E+01

Note: do not use QL's lower than the minimum QL's provided in agency guidance

6/20/2008 8:59:19 AM

Facility = Middlesex Courthouse WWTP  
Chemical = Ammonia  
Chronic averaging period = 30  
WLAa = 3.2  
WLAc = 0.83  
Q.L. = 0.2  
# samples/mo. = 1  
# samples/wk. = 1

Summary of Statistics:

# observations = 1  
Expected Value = 9  
Variance = 29.16  
C.V. = 0.6  
97th percentile daily values = 21.9007  
97th percentile 4 day average = 14.9741  
97th percentile 30 day average = 10.8544  
# < Q.L. = 0  
Model used = BPJ Assumptions, type 2 data

A limit is needed based on Chronic Toxicity  
Maximum Daily Limit = 1.67466617753554  
Average Weekly limit = 1.67466617753554  
Average Monthly Limit = 1.67466617753554

The data are:

pH Data from DMR's Submitted by Middle Peninsula  
Regional Security Center

DMR Due Date	Quant. Average	Quant. Max	Conc. Avg	Conc. Min.	Conc. Max
10-Feb-2000	NULL	NULL	NULL	8	8.5
10-Mar-2000	NULL	NULL	NULL	8	8.5
10-Apr-2000	NULL	NULL	NULL	8.5	8.5
10-May-2000	NULL	NULL	NULL	8.5	8.5
10-Jun-2000	NULL	NULL	NULL	8.5	8.5
10-Jul-2000	NULL	NULL	NULL	8.5	8.5
10-Aug-2000	NULL	NULL	NULL	8	8.5
10-Sep-2000	NULL	NULL	NULL	8	8.5
10-Oct-2000	NULL	NULL	NULL	8	8.5
10-Dec-2000	NULL	NULL	NULL	8	8.5
10-Jan-2001	NULL	NULL	NULL	8	8.5
10-Feb-2001	NULL	NULL	NULL	8	8.5
10-Mar-2001	NULL	NULL	NULL	8	8.5
10-Apr-2001	NULL	NULL	NULL	8	8.5
10-May-2001	NULL	NULL	NULL	8	8.5
10-Jun-2001	NULL	NULL	NULL	7.5	8.5
10-Jul-2001	NULL	NULL	NULL	8	8.5
10-Aug-2001	NULL	NULL	NULL	0.8	8.5
10-Sep-2001	NULL	NULL	8.5	8	NULL
10-Oct-2001	NULL	NULL	NULL	8	8.5
10-Nov-2001	NULL	NULL	NULL	8	8.5
10-Dec-2001	NULL	NULL	NULL	7.5	8.5
10-Jan-2002	NULL	NULL	NULL	8	8.5
10-Feb-2002	NULL	NULL	NULL	8	8.5
10-Mar-2002	NULL	NULL	NULL	8	8.5
10-Apr-2002	NULL	NULL	NULL	8	8.5
10-May-2002	NULL	NULL	NULL	8	8.5
10-Jun-2002	NULL	NULL	NULL	8	8.5
10-Jul-2002	NULL	NULL	NULL	7.5	8.5
10-Aug-2002	NULL	NULL	NULL	8	8
10-Sep-2002	NULL	NULL	NULL	8	8
10-Oct-2002	NULL	NULL	NULL	8	8
10-Nov-2002	NULL	NULL	NULL	8	8.5
10-Dec-2002	NULL	NULL	NULL	7.5	8.5
10-Jan-2003	NULL	NULL	NULL	7.5	8.5
10-Feb-2003	NULL	NULL	NULL	7.5	8
10-Mar-2003	NULL	NULL	NULL	8	9
10-Apr-2003	NULL	NULL	8	8	NULL
10-May-2003	NULL	NULL	NULL	7.5	8.5
10-Jun-2003	NULL	NULL	NULL	8	8.5
10-Jul-2003	NULL	NULL	NULL	8	8.5
10-Aug-2003	NULL	NULL	NULL	7	8.5
10-Sep-2003	NULL	NULL	NULL	7.5	8.5
10-Oct-2003	NULL	NULL	NULL	7	8.5
10-Nov-2003	NULL	NULL	NULL	8	8.5
10-Dec-2003	NULL	NULL	NULL	7.5	8.5
10-Jan-2004	NULL	NULL	NULL	8	8.5
10-Feb-2004	NULL	NULL	NULL	7.5	8
10-Mar-2004	NULL	NULL	NULL	7.5	8
10-Apr-2004	NULL	NULL	NULL	7.5	8.5
10-May-2004	NULL	NULL	NULL	8	8.5
10-Jun-2004	NULL	NULL	NULL	8	8.5
10-Jul-2004	NULL	NULL	NULL	8	8.5
10-Aug-2004	NULL	NULL	NULL	8	8.5
10-Sep-2004	NULL	NULL	NULL	8	8.5
10-Oct-2004	NULL	NULL	NULL	8	8.5
10-Nov-2004	NULL	NULL	NULL	8	8.5
10-Dec-2004	NULL	NULL	NULL	8	8.5
10-Jan-2005	NULL	NULL	NULL	8	8.5
10-Feb-2005	NULL	NULL	NULL	8	8.5
10-Mar-2005	NULL	NULL	NULL	8	8
10-Apr-2005	NULL	NULL	NULL	8	8
10-May-2005	NULL	NULL	NULL	8	8
10-Jun-2005	NULL	NULL	NULL	8	8
10-Jul-2005	NULL	NULL	NULL	8	8
10-Aug-2005	NULL	NULL	NULL	8	8.5
10-Sep-2005	NULL	NULL	NULL	8	8
10-Oct-2005	NULL	NULL	NULL	8	8
10-Nov-2005	NULL	NULL	NULL	8	8
10-Dec-2005	NULL	NULL	NULL	8	8
10-Jan-2006	NULL	NULL	NULL	8	8
10-Feb-2006	NULL	NULL	NULL	8	8
10-Mar-2006	NULL	NULL	NULL	8	8
10-Apr-2006	NULL	NULL	NULL	8	8.5
10-May-2006	NULL	NULL	NULL	8	8
10-Jun-2006	NULL	NULL	NULL	8	8
10-Jul-2006	NULL	NULL	NULL	8	8
10-Aug-2006	NULL	NULL	NULL	8	8.5
10-Sep-2006	NULL	NULL	NULL	8	8
10-Oct-2006	NULL	NULL	NULL	8	8
10-Nov-2006	NULL	NULL	NULL	8	8
10-Dec-2006	NULL	NULL	NULL	8	8
10-Jan-2007	NULL	NULL	NULL	8	8
10-Feb-2007	NULL	NULL	NULL	8	8.5
10-Mar-2007	NULL	NULL	NULL	7.5	8.5
10-Apr-2007	NULL	NULL	NULL	8	8
10-May-2007	NULL	NULL	NULL	8	8
10-Jun-2007	NULL	NULL	NULL	8	8
10-Jul-2007	NULL	NULL	NULL	8	8.5
10-Aug-2007	NULL	NULL	NULL	8	8
90 %tile				8	8.5
10 %tile				7.5	7.5



# FRESHWATER WATER QUALITY CRITERIA / WASTELOAD ALLOCATION ANALYSIS

Facility Name: Middle Peninsula Regional Security Center STP  
Receiving Stream: UT Urbanna Creek

Permit No.: VA0073318

Version: OWP Guidance Memo 00-2011 (8/24/00)

Stream Information				Stream Flows				Mixing Information				Effluent Information				
Mean Hardness (as CaCO3) =				1Q10 (Annual) =				Annual - 1Q10 Mix =				Mean Hardness (as CaCO3) =				
90% Temperature (Annual) =				7Q10 (Annual) =				- 7Q10 Mix =				90% Temp (Annual) =				
90% Temperature (Wet season) =				30Q10 (Annual) =				- 30Q10 Mix =				90% Temp (Wet season) =				
90% Maximum pH =				1Q10 (Wet season) =				Wet Season - 1Q10 Mix =				90% Maximum pH =				
10% Maximum pH =				30Q10 (Wet season) =				- 30Q10 Mix =				10% Maximum pH =				
Tier Designation (1 or 2) =				30Q5 =								Discharge Flow =				
Public Water Supply (PWS) Y/N? =				Harmonic Mean =												
Trout Present Y/N? =				Annual Average =												
Early Life Stages Present Y/N? =																
Parameter	Background Conc.	Water Quality Criteria			Wasteload Allocations			Antidegradation Baseline			Antidegradation Allocations			Most Limiting Allocations		
		Acute	Chronic	HH (PWS)	Acute	Chronic	HH (PWS)	Acute	Chronic	HH (PWS)	Acute	Chronic	HH (PWS)	Acute	Chronic	HH (PWS)
Acenaphthene	0	--	--	2.7E+03	--	--	na	2.7E+03	--	--	--	--	na	2.7E+03	--	na
Acridien	0	--	--	7.8E+02	--	--	na	7.8E+02	--	--	--	--	na	7.8E+02	--	na
Acrylonitrile <sup>c</sup>	0	--	--	6.8E+00	--	--	na	6.8E+00	--	--	--	--	na	6.8E+00	--	na
Aldrin <sup>c</sup>	0	3.0E+00	--	1.4E+03	3.0E+00	--	na	1.4E+03	--	--	--	--	na	3.0E+00	--	na
Ammonia-N (mg/l)	0	3.20E+00	8.27E-01	--	3.2E+00	8.3E-01	na	--	--	--	--	--	na	3.2E+00	8.3E-01	na
Ammonia-N (mg/l)	0	3.20E+00	1.09E+00	--	3.2E+00	1.1E+00	na	--	--	--	--	--	na	3.2E+00	1.1E+00	na
Anthrane	0	--	--	1.1E+05	--	--	na	1.1E+05	--	--	--	--	na	1.1E+05	--	na
Antimony	0	--	--	4.3E+03	--	--	na	4.3E+03	--	--	--	--	na	4.3E+03	--	na
Arsenic	0	3.4E+02	1.5E+02	--	#VALUE!	#VALUE!	na	--	--	--	--	--	#VALUE!	#VALUE!	na	na
Baunum	0	--	--	--	--	--	na	--	--	--	--	--	na	--	--	na
Benzene <sup>c</sup>	0	--	--	7.1E+02	--	--	na	7.1E+02	--	--	--	--	na	7.1E+02	--	na
BenZidine <sup>c</sup>	0	--	--	5.4E+03	--	--	na	5.4E+03	--	--	--	--	na	5.4E+03	--	na
Benzo (a) anthracene <sup>c</sup>	0	--	--	4.9E-01	--	--	na	4.9E-01	--	--	--	--	na	4.9E-01	--	na
Benzo (b) fluoranthene <sup>c</sup>	0	--	--	4.9E-01	--	--	na	4.9E-01	--	--	--	--	na	4.9E-01	--	na
Benzo (k) fluoranthene <sup>c</sup>	0	--	--	4.9E-01	--	--	na	4.9E-01	--	--	--	--	na	4.9E-01	--	na
Benzo (a) pyrene <sup>c</sup>	0	--	--	4.9E-01	--	--	na	4.9E-01	--	--	--	--	na	4.9E-01	--	na
Bis2-Chloroethyl Ether	0	--	--	1.4E+01	--	--	na	1.4E+01	--	--	--	--	na	1.4E+01	--	na
Bis2-Chloroisopropyl Ether	0	--	--	1.7E+05	--	--	na	1.7E+05	--	--	--	--	na	1.7E+05	--	na
Bromoform <sup>c</sup>	0	--	--	3.6E+03	--	--	na	3.6E+03	--	--	--	--	na	3.6E+03	--	na
Bulkybenzophthalate	0	--	--	5.2E+03	--	--	na	5.2E+03	--	--	--	--	na	5.2E+03	--	na
Cadmium	0	8.2E-01	3.8E-01	--	8.2E-01	3.8E-01	na	--	--	--	--	--	na	8.2E-01	3.8E-01	na
Carbon Tetrachloride <sup>c</sup>	0	--	--	4.4E+01	--	--	na	4.4E+01	--	--	--	--	na	4.4E+01	--	na
Chlordane <sup>c</sup>	0	2.4E+00	4.3E-03	--	2.4E+00	4.3E-03	na	--	--	--	--	--	na	2.4E+00	4.3E-03	na
Chloride	0	8.6E+05	2.3E+05	--	8.6E+05	2.3E+05	na	--	--	--	--	--	na	8.6E+05	2.3E+05	na
TRC	0	1.9E+01	1.1E+01	--	1.9E+01	1.1E+01	na	--	--	--	--	--	na	1.9E+01	1.1E+01	na
Chlorobenzene	0	--	--	2.1E+04	--	--	na	2.1E+04	--	--	--	--	na	2.1E+04	--	na